

ASSIGNMENT 3

Textbook Assignment: "Steam Distribution Systems" and "Heating Systems," chapters 3 and 4, pages 3-1 through 4-4.

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| <p>3-1. What are the two types of steam distribution systems?</p> <ol style="list-style-type: none">1. Interior and exterior2. Automatic and manual3. Electric and hydraulic4. Pneumatic and manual <p>3-2. What are the two types of major underground steam distribution systems?</p> <ol style="list-style-type: none">1. Conduit and interior2. Utilidor and conduit3. Interior and utilidor4. Network and conduit <p>3-3. The conduit of a conduit type of steam distribution system is constructed of what type of material?</p> <ol style="list-style-type: none">1. Galvanized steel2. Masonry cement3. Brick4. Cast iron <p>3-4. What factors determine the size and shape of a utilidor?</p> <ol style="list-style-type: none">1. Number of manholes and the type of pipe hangers to be used2. Type of insulation and the imposed loads3. Number of distribution pipes and the depth into the ground4. Materials to be used in construction and the provision for pipe expansion | <p>3-5. What is the primary disadvantage of using an overhead steam distribution system?</p> <ol style="list-style-type: none">1. It has a high maintenance cost2. It requires an expansion joint3. The type of material required for the steam return piping4. Water collects and seeps through the sealer at the openings <p>3-6. Of the following factors, which one is NOT considered when classifying interior steam distribution systems?</p> <ol style="list-style-type: none">1. Pipe arrangement2. Accessories used3. Type of controls used4. Size and type of boiler <p>3-7. What is the function of the air valve in a gravity, one-pipe, air-vent system?</p> <ol style="list-style-type: none">1. It vents air from the radiators2. It shuts off the radiators3. It turns on the radiators4. It vents condensate from the radiators <p>3-8. Water hammer and slow heating are characteristics of a gravity, one-pipe, air-vent system when the pipe sizing, pitch, and general design are inadequate.</p> <ol style="list-style-type: none">1. True2. False |
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- 3-9. Water hammer in a gravity, one-pipe, air-vent system can be controlled by
1. venting air from the radiators
 2. ensuring that condensate and steam flow in the same direction
 3. providing enough hydrostatic head above the entrance to the boiler
 4. ensuring condensate is properly drained from the lines
- 3-10. To obtain the necessary internal drainage when installing a gravity, one-pipe, air-vent system, you should slope the lines down at least
1. one-fourth of an inch for every 10 feet of pipe
 2. one-fourth of an inch for every 20 feet of pipe
 3. one-eighth of an inch for every 20 feet of pipe
 4. one-eighth of an inch for every 10 feet of pipe
- 3-11. What is the purpose of the main steam stop valve in most steam systems?
1. To hold condensate in the boiler until it is released
 2. To hold steam in the boiler until it is released
 3. To ensure the proper water level is maintained
 4. To drain water from the radiator
- 3-12. When opening the main steam stop valve, you should
1. crack the valve open
 2. open the valve one-quarter of a turn
 3. open the valve one-half of a turn
 4. open the valve one full turn
- 3-13. When a radiator fails to heat or develops water hammer, which of the following malfunctions is NOT a probable cause?
1. Failure of the air vents to operate
 2. Radiator valves not fully opened
 3. Radiator and line incorrectly pitched
 4. Excessive pressure drop in the supply lines
- 3-14. In a two-pipe vapor system, what trap permits the flow of condensate and air from the radiator?
1. Air
 2. Condensate
 3. Thermostatic
 4. Boiler pressure return
- 3-15. In the two-pipe vapor system, the bottom of the trap should be installed how many inches above the boiler waterline?
1. 12
 2. 18
 3. 24
 4. 36
- 3-16. In a two-pipe vapor system with a condensate pump and the whole system fails to heat, which of the following malfunctions may NOT be the cause of the trouble?
1. Clogged receiver vents
 2. Flooded return line
 3. Air binding the system
 4. Inoperative steam trap

- 3-17. In the two-pipe vapor distribution system, what component returns the condensate to the boiler and maintains the vacuum or subatmospheric pressure in the return system?
1. Thermostatic trap
 2. Float switch
 3. Vacuum pump
 4. Condensate pump unit
- 3-18. You should only use the float switch in which of the following situations?
1. To remove excess condensate from the thermostatic trap
 2. When the vacuum switch is defective
 3. To eliminate air leakage
 4. When the system fails to heat
- 3-19. What are the two categories of steam radiators?
1. Wall and floor
 2. Fin tube and cast iron
 3. One tube and two tube
 4. Sectional and integral
- 3-20. What are the two types of radiator air vents?
1. Wall and floor
 2. Sectional and integral
 3. Automatic and manual
 4. Electrical and hydraulic
- 3-21. The hermetically sealed bellows of an air vent contains a volatile liquid that has a boiling point that is how much lower than that of water?
1. 20°F
 2. 15°F
 3. 10°F
 4. 5°F
- 3-22. A steam trap is installed in a steam line for which of the following reasons?
1. To allow steam to escape from the line
 2. To prevent the escape of steam from a using device
 3. To keep foreign particles from passing through the line
 4. To drain condensate from the drain line without allowing steam to pass through it
- 3-23. Of the following types of traps, which one is NOT a steam trap?
1. Float
 2. Ball-float
 3. Thermodynamic
 4. Thermostatic impulse
- 3-24. The operation of a bucket trap depends on what condition?
1. Difference in temperature between the steam and the condensate
 2. Difference in the density between the steam and the condensate
 3. Buoyancy of the bucket
 4. Mixture of air and condensate in the trap
- 3-25. What type of steam trap is often used on radiators and is commonly known as a "radiator trap"?
1. Bucket
 2. Thermostatic
 3. Float
 4. Impulse

- 3-26. What component of the float thermostatic trap activates the discharge valve?
1. Thermostatic vent
 2. Cooling leg
 3. Ball float
 4. Bellows
- 3-27. The design of what type of steam trap is based on the principle that a volume of hot water that is under pressure will flash into steam when the pressure is reduced?
1. Impulse
 2. Thermodynamic
 3. Throttling
 4. Bimetallic-element
- 3-28. The pressure on the discharge side of the trap should NOT exceed what percentage of the inlet pressure to ensure that an impulse trap operates properly?
1. 5 percent
 2. 10 percent
 3. 20 percent
 4. 25 percent
- 3-29. A thermodynamic trap is usually constructed from what type of material?
1. Cast iron
 2. Stainless steel
 3. Malleable steel
 4. Aluminum
- 3-30. The bimetallic-element trap works basically the same as what other type of trap?
1. Float
 2. Thermostatic
 3. Impulse
 4. Thermodynamic
- 3-31. When a test plug is not available on the top of the trap, you can prime an inverted bucket trap by
1. blowing down the trap
 2. allowing the discharge from another trap to backup into the trap
 3. closing the discharge valve and opening the steam supply valve slowly until the trap is filled with condensate
 4. opening the discharge and steam supply valves until the trap is filled with condensate
- 3-32. When the test valve method for testing steam traps is used, a continuous steam blow indicates which of the following malfunctions?
1. Loss of prime
 2. No condensate is passing
 3. Considerable rattling
 4. Slight temperature difference
- 3-33. You test a steam trap by listening with an engineer's stethoscope held in contact with the body of the trap. What should you hear if the trap is working properly?
1. Faint hissing sound
 2. Regular opening and closing of the trap valve
 3. Continuous flow of steam
 4. Rattling sound

3-34. What type of tank helps to eliminate disturbances caused in piping systems by violent steam formation?

1. Flash
2. Storage
3. Surge
4. Supply

3-35. What are the two general types of water heaters?

1. Flash and surge
2. Floor and instantaneous
3. Surge and storage
4. Storage and instantaneous

3-36. According to safety regulations, the water inside a storage type of hot-water heater should not exceed

1. 212°F
2. 195°F
3. 180°F
4. 165°F

3-37. To ensure that steam is not leaking into the water, you inspect the coil

1. every 2 years
2. annually
3. semiannually
4. quarterly

3-38. The operation of the instantaneous type heater and the storage type of heater are basically the same.

1. True
2. False

3-39. Of the following types, which one is NOT a type of expansion joint?

1. Bellows joint
2. Slip joint
3. Ball loop
4. Expansion loop

3-40. What type of expansion joint is most often used to allow expansion to occur naturally in a system that has screwed joints?

1. Slip
2. Swing
3. Bellow
4. Ball

3-41. You should lubricate slip joints at what interval?

1. Monthly
2. Quarterly
3. Semiannually
4. Annually

3-42. You should inspect slip joints for signs of erosion, corrosion, wear, deposits, and binding at what interval?

1. Monthly
2. Quarterly
3. Semiannually
4. Annually

3-43. The measurement of heat intensity in degrees Fahrenheit (F) or Celsius (C) is known by what term?

1. Sensible heat
2. Temperature
3. Latent heat
4. Total heat

- 3-44. What type of heat does the thermometer measure?
1. Sensible
 2. Latent
 3. Specific
 4. Total
- 3-45. On the Fahrenheit thermometer what is the range between freezing and boiling?
1. 100°
 2. 128°
 3. 150°
 4. 180°
- 3-46. On the Celsius thermometer, what is the range from freezing to boiling?
1. 100°
 2. 128°
 3. 150°
 4. 180°
- 3-47. When the temperature is 95°F, what is the Celsius equivalent?
1. 25°C
 2. 30°C
 3. 33°C
 4. 35°C
- 3-48. When the temperature is 25°C what is the Fahrenheit equivalent?
1. 20°F
 2. 32°F
 3. 44°F
 4. 77°F
- 3-49. A British thermal unit is the amount of heat required to change the temperature of 1 pound of pure water 1°F at sea level.
1. True
 2. False
- 3-50. A block of ice at 32°F melts into water at the same temperature. What form of heat was required to produce this change of state?
1. Latent
 2. Intense
 3. Specific
 4. Thermal
- 3-51. The amount of heat added to a substance above its boiling point is the definition of what term?
1. Superheat
 2. Sensible heat
 3. Specific heat
 4. Latent heat
- 3-52. Sensible heat plus latent heat equals what type of heat?
1. Measurable
 2. Intense
 3. Total
 4. Superheat
- 3-53. Absolute zero is what temperature on the Celsius scale?
1. -10°C
 2. -32°C
 3. -238°C
 4. -320°C

3-54. In what direction does heat flow?

1. Clockwise
2. Counterclockwise
3. From a warmer to a cooler substance
4. From a cooler to a warmer substance

3-55. What condition must be present for heat to flow?

1. Space to heat
2. Substance to heat
3. Difference in pressure
4. Difference in temperature

3-56. When one end of a stove poker is held in a flame, the other end soon becomes too hot to handle. What method of heating has been used?

1. Convection
2. Conduction
3. Radiation
4. Diffusion

3-57. The transfer of heat by means of media, such as water, air, and steam, defines

1. convection
2. conduction
3. radiation
4. diffusion

3-58. A hand held in front of a stove is warmed by what means?

1. Convection
2. Conduction
3. Radiation
4. Diffusion

3-59. What type of material is the best known reflector?

1. Black clothing
2. White clothing
3. Dull metal
4. Polished metal

3-60. Gaseous fuels are usually classified according to what factor?

1. Abundance
2. Use
3. Source
4. Cost

3-61. Natural gas has which of the following characteristics?

1. It is odorless and colorless
2. It has a distinctive odor
3. It has a distinctive color
4. It is replete with ash

3-62. Of the following types of gas, which one is NOT a type of manufactured gas?

1. Methane
2. Carbureted water
3. Oil
4. Producer

3-63. What is the major element in manufactured gases?

1. Methane
2. Ethane
3. Hydrogen
4. Oxygen

3-64. Propane boils at what temperature?

1. -44°F
2. -54°F
3. -62°F
4. -70°F

3-65. Butane vaporizes at what temperature?

1. 60°F
2. 54°F
3. 32°F
4. 25°F